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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.09/HSN/CEMENT/2014-15

Date: 14.04.2014

TEST REPORT

CLIENT	:	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
AGENCY	:	**Mr. H.S. Nataraj,** Contractor, Bangalore.
NAME OF THE WORK	:	Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
REFERENCE	:	EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
SAMPLE ID	:	CEMENT
SAMPLES SUPPLIED BY	:	AGENCY

The results of the tests conducted on the cement sample are as follows:

Sl.No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4)	29.00 %	-
2	a) Initial Setting Time	IS-4031 (Part -5)	160 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5)	490 Minutes	Not More than 600 Minutes
3	Soundness by the Le-Chatelier method	IS-4031 (Part 3)	1 mm	Not more than 10 mm

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Job No.: CTCE/BBMP/W.No.09/HSN/SAND/2014-15 : 14.04.2014

TEST REPORT ON FINE AGGREGATES
IS 383-1970 (RA- 2002)

Client : **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **Mr. H.S. Nataraj,** Contractor, Bangalore.

Name of Work : Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013

Date of Testing : 14.04.2014

Material : Sand Total Wt. of Aggregates in gms **1000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits For Zone-II
10	0	0	0	100	100
4.75	48	4.80	4.80	95.2	90-100
2.36	198	19.80	24.60	75.4	75-100
1.18	215	21.50	46.10	53.9	55-90
600 Micron	150	15.00	61.10	38.9	35-59
300 Micron	205	20.50	81.60	18.4	8-30
150 Micron	120	12.00	93.60	6.4	0-10

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Job No.: CTCE/BBMP/W.No.09/HSN/AGG/2014-15 : 14.04.2014

TEST REPORT ON COARSE AGGREGATES
IS 383-1970 (RA- 2002)

Client : **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **Mr. H.S. Nataraj,** Contractor, Bangalore.

Name of Work : Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013

Date of Testing : 14.04.2014

Material : 40mm Aggregates

Total Wt. of Aggregates in gms **5000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits
80	0	0	0	100	100
40	123	2.46	2.46	97.54	95-100
20	3092	61.84	64.30	35.70	30-70
10	1003	20.06	84.36	15.64	10-35
4.75	589	11.78	96.14	3.86	0-5

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Job No.: CTCE/BBMP/W.No.09/HSN/STEEL/2014-15 16.04.2014

TEST REPORT ON REINFORCEMENT STEEL

Client	:	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	:	**Mr. H.S. Nataraj,** Contractor, Bangalore.
Name of the Work	:	Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	:	EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
Date of Test	:	16.04.2014
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	8	0.40	510	552	13.15	O.K	O.K

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Job No.: CTCE/BBMP/W.No.09/HSN/STEEL/2014-15 16.04.2014

TEST REPORT ON REINFORCEMENT STEEL

Client	:	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	:	**Mr. H.S. Nataraj,** Contractor, Bangalore.
Name of the Work	:	Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	:	EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
Date of Test	:	16.04.2014
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	10	0.62	514	557	13.35	O.K	O.K

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Job No.: CTCE/BBMP/W.No.09/HSN/CUBE/2014-15 16.05.2014

TEST REPORT ON CONCRETE CUBES

Client	: **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	: **Mr. H.S. Nataraj,** Contractor, Bangalore.
Name of the work	: Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	: EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
Sample ID	: RCC Drain Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	18.04.2014	16.05.2014	8.129	475.5	21.13
2	18.04.2014	16.05.2014	8.293	493.6	21.94
3	18.04.2014	16.05.2014	8.310	513.6	22.83

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Job No.: CTCE/BBMP/W.No.09/HSN/CUBE/2014-15

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TEST REPORT ON CONCRETE CUBES

Client	: **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	: **Mr. H.S. Nataraj,** Contractor, Bangalore.
Name of the work	: Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	: EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
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Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	18.04.2014	16.05.2014	8.109	489.3	21.75
2	18.04.2014	16.05.2014	8.298	523.6	23.27
3	18.04.2014	16.05.2014	8.385	506.4	22.51

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TEST REPORT ON CONCRETE CUBES

Client	: **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	: **Mr. H.S. Nataraj,** Contractor, Bangalore.
Name of the work	: Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	: EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
Sample ID	: RCC Drain Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	21.04.2014	19.05.2014	8.098	502.2	22.32
2	21.04.2014	19.05.2014	8.179	512.3	22.77
3	21.04.2014	19.05.2014	8.254	536.7	23.85

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TEST REPORT ON CONCRETE CUBES

Client	: **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	: **Mr. H.S. Nataraj,** Contractor, Bangalore.
Name of the work	: Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	: EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
Sample ID	: RCC Drain Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	21.04.2014	19.05.2014	8.182	490.3	21.79
2	21.04.2014	19.05.2014	8.290	510.3	22.68
3	21.04.2014	19.05.2014	8.326	520.6	23.14

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Job No.: CTCE/BBMP/W.No.09/HSN/WMM/Gradation/2014-15 : 14.05.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **Mr. H.S. Nataraj,** Contractor, Bangalore.

Name of Work : Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013

Date of Testing : 14.05.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	105	105	2.1	97.9	95-100
22.4	1585	1690	33.8	66.2	60-80
11.2	990	2680	53.6	46.4	40-60
4.75	835	3515	70.3	29.7	25-40
2.36	705	4220	84.4	15.6	15-30
0.600	295	4515	90.3	9.7	8-22
0.075	315	4830	96.6	3.4	0-8

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Job No.: CTCE/BBMP/W.No.09/HSN/WMM/AIV/2014-15 14.05.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. H.S. Nataraj,** Contractor, Bangalore.
Name of the Work	Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	14.05.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	390	398	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	84	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	308	314	
4	Aggregate Impact value = percent fines	21.03	21.11	
	100* (W_2/W_1)%			**21.07**

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.09/HSN/WMM/S-T/2014-15 14.05.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. H.S. Nataraj,** Contractor, Bangalore.
Name of Work	Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	14.05.2014

Result : Flakiness Index = **11.25%**

Elongation Index = **13.63%**

Civil-Tech Consultants & Engineers Bangalore

Result : Combined Flakiness & Elongation index 24.88%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.09/HSN/QB(SDBC)/2014-15 12.05.2014

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

CLIENT	:	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
AGENCY	:	**Mr. H.S. Nataraj,** Contractor, Bangalore.
NAME OF THE WORK	:	Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
REFERENCE	:	EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
SAMPLE ID	:	Bitumen
DATE OF TESTING	:	12.05.2014

The results of the tests conducted on the bitumen sample.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2009)	82	80 to 100
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2009)	44	Min. 40
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 75
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2009)	302	Min. 220

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Job No.: CTCE/BBMP/W.No.09/HSN/SDBC/AIV/2014-15

12.05.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. H.S. Nataraj,** Contractor, Bangalore.
Name of the Work	Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	12.05.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	393	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	78	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	311	307	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	20.05	21.88	20.97

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

Note:

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Job No.: CTCE/BBMP/W.No.09/HSN/SDBC/Shape_T/2014-15 : 12.05.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	: **Mr. H.S. Nataraj,** Contractor, Bangalore.
Name of Work	: Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	: EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Semi Dense Bituminous Concrete
Date of Testing	: 12.05.2014

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Result : Flakiness Index = **12.39%**

Elongation Index = **13.85%**

Result : Combined Flakiness & Elongation index **26.24%**

Comments:

Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/W.No.09/HSN/SDBC/Stripping/2014-15 15.05.2014

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Client	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. H.S. Nataraj,** Contractor, Bangalore.
Name of the work	Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	15.05.2014

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.2	3.30	96.70
2	3.3		
3	3.4		

Comments:

→ Minimum allowable Aggregate retained coating for Semi Dense Bituminous Concrete is 95%

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Job No.: CTCE/BBMP/W.No.09/HSN/SDBC/Sp_Wa/2014-15

15.05.2014

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. H.S. Nataraj,** Contractor, Bangalore.
Name of the Work	Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	15.05.2014

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2020	2021	2022	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1265	1266	1267	
4	Weight of saturated surface dry aggregate in air	W_3 g	2015	2019	2018	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	750	753	751	
6	Weight of oven dried aggregate	W_4 g	2006	2003	2000	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.675	2.660	2.663	2.666
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.707	2.718	2.729	2.718
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.45%	0.80%	0.90%	0.72%

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0%

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Job No.: CTCE/BBMP/W.No.09/HSN/SDBC/Bit/2014-15 15.05.2014

BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AS per IRC:SP:-1984

CLIENT	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
AGENCY	**Mr. H.S. Nataraj,** Contractor, Bangalore.
NAME OF THE WORK	Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
REFERENCE	EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
SAMPLE I/D	Roads at Durga Layout Ward No.09,
DATE OF TESTING	15.05.2014

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	475	474
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25	26.00
7. Bitumen content in %	5.00	5.20
8. Average	**5.10**	

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Job No.: CTCE/BBMP/W.No.09/HSN/SDBC/Bit/2014-15 15.05.2014

BITUMEN CONTENT GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IS2386 and IRC:SP:11-1984

CLIENT	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
AGENCY	**Mr. H.S. Nataraj,** Contractor, Bangalore.
NAME OF THE WORK	Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
REFERENCE	EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
SAMPLE I/D	Roads at Durga Layout Ward No.09,
DATE OF TESTING	15.05.2014

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	22.39	4.71	4.71	95.29	90-100
4.75	265.3	55.85	60.57	39.43	35-51
2.36	50.26	10.58	71.15	28.85	24-39
1.18	40.22	8.47	79.61	20.39	15-30
0.3	31.26	6.58	86.20	13.80	9-19
0.075	36.36	7.65	93.85	6.15	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	22.98	4.85	4.85	95.15	90-100
4.75	255.8	53.97	58.81	41.19	35-51
2.36	36.39	7.68	66.49	33.51	24-39
1.18	31.79	6.71	73.20	26.80	15-30
0.3	46.36	9.78	82.98	17.02	9-19
0.075	52.36	11.05	94.03	5.97	3-8

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Job No.: CTCE/BBMP/W.No.09/HSN/SDBC/AGG/2014-15 15.05.2014

Aggregate Gradation Test

IS : 2386 Part I

Client	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. H.S. Nataraj,** Contractor, Bangalore.
Name of the Work	Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete (SDBC)
Date of Testing	15.05.2014

Total Weight of Sample: 5200 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	205	3.9	3.94	96.06	90-100	
4.75	2955	56.8	60.77	39.23	35-51	
2.36	615	11.8	72.60	27.40	24-39	
1.18	500	9.6	82.21	17.79	15-30	
0.3	250	4.8	87.02	12.98	9-19	
0.075	315	6.1	93.08	6.92	3-8	

Total Weight of Sample: 5300 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	250	4.7	4.72	95.28	90-100	
4.75	2650	50.0	54.72	45.28	35-51	
2.36	650	12.3	66.98	33.02	24-39	
1.18	480	9.1	76.04	23.96	15-30	
0.3	390	7.4	83.40	16.60	9-19	
0.075	525	9.9	93.30	6.70	3-8	

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Job No.: CTCE/BBMP/W.No.09/HSN/SDBC/Stability/2014-15 15.05.2014

TEST REPORT ON STABILITY OF MIX

Client	:	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	:	**Mr. H.S. Nataraj,** Contractor, Bangalore.
Name of the Work	:	Improvements to Durga Layout Main Road and Cross Roads in Ward No.09, Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	:	EE/BTP/BBMP/E-PMT/(4502)/WO/159/2013-14 Dated: 09.10.2013
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Semi Dense Bituminous Concrete
Date of Testing	:	15.05.2014

The results of the tests conducted on the bituminous concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-16)
1	Marshal Stability, Kn	9.20	8.95	8.2 Kn (min)
2	Marshal flow, mm	3.05	3.20	2 – 4
3	Percent air voids in Mineral Aggregate	3.30	3.60	3 – 5
4	Voids in Compacted Mix	13.05	14.15	13 – 15
5	Percent Voids filled with Bitumen	66.25	68.25	65 - 78
6	Density, g/cc	2.27	2.28	--

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